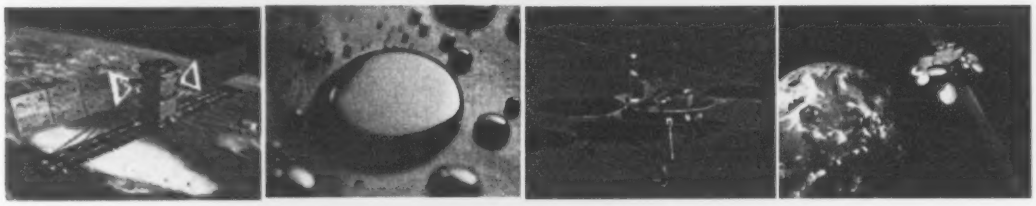
Agence spatiale canadienne | Canadian Space Agency

Canada

THE CANADIAN SPACE AGENCY

2011-12 Estimates

REPORT ON PLANS AND PRIORITIES



Minister of Industry and
Minister of State (Agriculture)

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MINISTER'S MESSAGE

As Canada's economy shows continued signs of growth following the global recession, the Harper government has a clear vision for Canada. We remain focused on creating jobs and economic growth in all regions of Canada. We remain committed to fighting protectionism, the number one impediment to global economic recovery. And we will continue to support science and technology as it drives innovation to improve quality of life for Canadians.

In the coming year, Industry Canada and its portfolio partners will seize the opportunities of the evolving global economy. We will set the conditions for industrial success by improving the policy we put in place, making strategic investments and supporting business-focused programs and services. We are working to remove impediments to competition and to create the best climate for international investment. Industry Canada will lead efforts in developing major policy initiatives to support Canada's digital economy and shape a whole-of-government strategy for federal tourism activities. The Department will also improve the cost-effectiveness and efficiency of its own operations, and work with recovering industries and sectors to help assure a solid and prosperous future.

In 2011-2012 the Canadian Space Agency will pursue the development of leading-edge technologies such as the RADARSAT Constellation, a fleet of earth observation remote-sensing satellites. The critical images of these satellites support the operational needs of many government departments and agencies, especially in the Arctic region. The RADARSAT Constellation will also extend the 15-year archive of RADARSAT images, a rich source of geophysical information about Canada and the world. These images are of key interest to government and university researchers, scientists and policy-makers.

And, as always, I will work with the Industry portfolio partners, the private sector and other governments to create the fundamentals for a strong and competitive economy.

It is my pleasure to present this year's Report on Plans and Priorities for the Canadian Space Agency.

The Honourable Christian Paradis
Minister of Industry and
Minister of State (Agriculture)

PRESIDENT'S MESSAGE

Over nearly fifty years, Canada has leveraged its expertise and innovation through the development and application of specialized space technology, fully focused to serve the evolving priorities of Government and the needs of Canadians. These space-based assets have formed the backbone, an invisible infrastructure that is at the very heart of innovation, building knowledge through the pursuit of our scientific interests, while contributing to securing markets in the global knowledge-based economy for our world-class technologies, applications and services.

Through the active development, deployment and operation of niche space technologies and applications, the Canadian Space Agency actively supports the Government with advanced data and information supporting our understanding and management of interconnected and vulnerable eco-systems, weather forecasting, safe navigation in ice-infested waters, sustainable development of our natural resources in the north, as well as, contributing to Canada's efforts to assure the safety, sovereignty, and security of its vast landmass and coastal approaches.

The commitment of the Government with fresh investments are sustaining Canada's global lead in the design of advanced space robotics, spurring the creation of landers, rovers and other technologies that will position our nation to play a credible and valued role in future international space exploration missions. At the same time, the Agency is addressing the need for enhanced surveillance of our nation's vast resources, especially the Arctic, with the construction of a three-satellite Radarsat Constellation that will be dedicated to serving Government priorities.

Over the past two years, the Agency has actively consulted with senior executives of government departments, academia and industry and heads of space agencies in order to formulate a strategic and integrated vision that will focus Canada's Space Program well into the future. In order to give full force to this strategic direction, the Agency has reformulated its Program Activity Architecture and reorganized its business lines to achieve the following objectives:

- Align the Canadian Space Agency's programs and activities to support the key priorities of the Government and the Science and Technology Strategy.
- Increase service and expand the use of space data and information by government departments and agencies to respond to the needs of Canadians.
- Expand Canadian space expertise and enhance synergy between government, academia and industry partners.

- Foster operational excellence and effectiveness by promoting a consistent vision and direction on programs and projects throughout their life cycle.
- Strengthen the Canadian Space Agency to position Canada as a key player in future space exploration missions.

In the ongoing pursuit of our mandate, we present the Canadian Space Agency's Report on Plans and Priorities outlining our key initiatives, priorities and expected outcomes for the upcoming years.

Steve MacLean
President

SECTION 1: OVERVIEW

1.1 RAISON D'ÊTRE AND RESPONSIBILITIES

The mandate of the Canadian Space Agency (CSA) is *"to promote the peaceful use and development of space, to advance the knowledge of space through science and to ensure that space science and technology provide social and economic benefits for Canadians".*

CSA in brief in 2011-2012

President: Steve MacLean

Minister of Industry: The Honourable Tony Clement

Budget: $424.6 million

Headquarters: Saint-Hubert, Quebec

Employees: 710

Partners: Other Government Departments (OGDs), Canadian academia and space industry, and international space agencies

The CSA is achieving this mandate in cooperation with other government departments/agencies, industries, and universities, as well as international partners. In addition to delivering its own programs, the CSA is responsible for coordinating all federal civil space-related policies and programs pertaining to science and technology research, industrial development, and international cooperation.

To learn more about the mandate of the Canadian Space Agency, go to:
http://www.asc-csa.gc.ca/eng/about/mission.asp

The Canadian Space Strategy (CSS) approved by the Government of Canada in February 2005 guides the Canadian Space Agency in the management of its programs. The Strategy is instrumental in focusing decision-making at the CSA and aligning all space-related program activities through its strategic outcome.

To learn more about the Canadian Space Strategy, go to:
http://www.asc-csa.gc.ca/eng/publications/default.asp#strategy

The release in 2007 of the Government's Science and Technology Strategy – *Mobilizing Science and Technology to Canada's Advantage* – provides the CSA with a solid framework with which to prioritize CSA programs and initiatives to "make Canada a world leader in science and technology and a key source of entrepreneurial innovation and creativity".

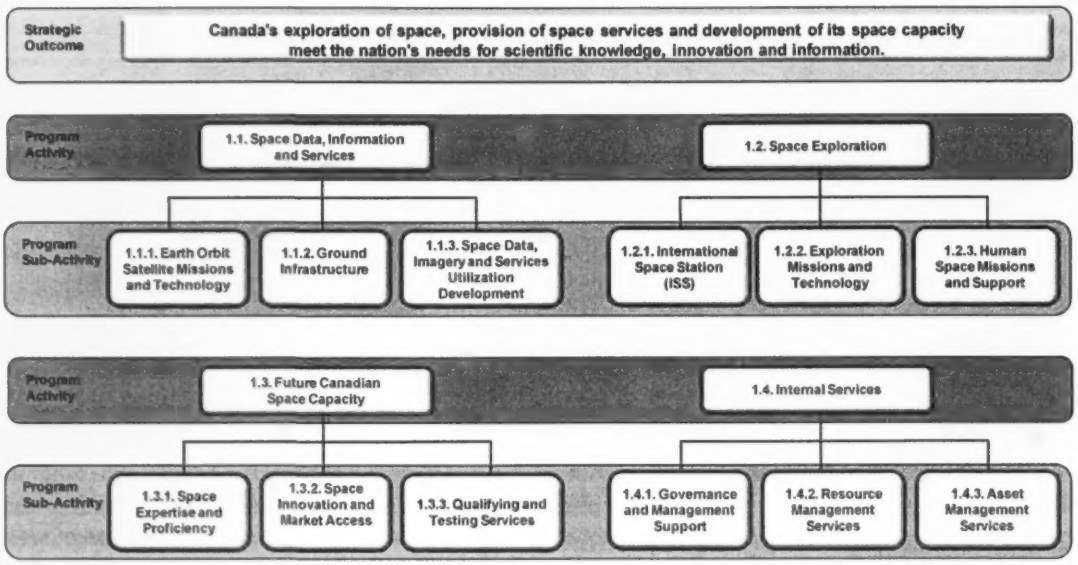
To learn more about Canada's Science and Technology Strategy, go to:
http://www.ic.gc.ca/epic/site/ic1.nsf/en/h_00231e.html

CSA Organizational Structure

Reporting to the Minister of Industry, the Canadian Space Agency's Executive Officer is the President, assisted by the following executives: Vice-President, four Directors General (Space Utilization, Space Exploration, Space Science and Technology, Corporate Services) as well as the Chief Financial Officer and the Chief Human Resources Officer.

1.2 STRATEGIC OUTCOME AND PROGRAM ACTIVITY ARCHITECTURE

Canadian Space Agency's 2011-2012 Program Activity Architecture (PAA)


Strategic Outcome
Canada's exploration of space, provision of space services and development of its space capacity meet the nation's needs for scientific knowledge, innovation and information.
Program Activity
1.1. Space Data, Information and Services
1.2. Space Exploration
Program Sub-Activity
1.1.1. Earth Orbit Satellite Missions and Technology
1.1.2. Ground Infrastructure
1.1.3. Space Data, Imagery and Services Utilization Development
1.2.1. International Space Station (ISS)
1.2.2. Exploration Missions and Technology
1.2.3. Human Space Missions and Support
Program Activity
1.3. Future Canadian Space Capacity
1.4. Internal Services
Program Sub-Activity
1.3.1. Space Expertise and Proficiency
1.3.2. Space Innovation and Market Access
1.3.3. Qualifying and Testing Services
1.4.1. Governance and Management Support
1.4.2. Resource Management Services
1.4.3. Asset Management Services

DESCRIPTION OF PROGRAM ACTIVITIES AND SUB-ACTIVITIES

The full description of Program Activities and Sub-Activities taken from the Main Estimates is available online at: http://www.tbs-sct.gc.ca/est-pre/estime.asp

1.1. Space Data, Information and Services: This Program Activity includes the provision of space-based solutions (data, information and services) and the expansion of their utilization. It also serves to install and run ground infrastructure that processes the data and operates satellites.

- **1.1.1. Earth Orbit Satellite Missions and Technology:** This Sub-Activity (SA) is necessary because Other Government Departments (OGDs) use satellite-generated data, information and services to deliver their mandate; and so do academia to perform their research.
- **1.1.2. Ground Infrastructure:** This SA is necessary to operate satellites as well as to process and make available space-based data received by the Canadian Space Agency to assist OGDs in delivering their mandate.
- **1.1.3. Space Data, Imagery and Services Utilization Development:** This SA is necessary to foster the development of a Canadian value-added industry that turns space data and information into readily useable products, as well as to increase the ability of OGDs to use space-based solutions (data, information and services) for the delivery of their mandate and to increase the ability of academia to perform their research.

1.2. Space Exploration: This Program Activity provides valuable Canadian science, signature technologies and qualified astronauts to international space exploration endeavours.

- **1.2.1. International Space Station (ISS):** This SA is necessary to generate specific understanding and technological advances to prepare for the challenges of space exploration and for terrestrial benefits. This SA provides Canadian industry and academia privileged access to the ISS.
- **1.2.2. Exploration Missions and Technology:** This SA is necessary as it contributes valued Canadian signature technologies to international space exploration endeavours and generates a better understanding of the universe, the solar system and our home planet.
- **1.2.3. Human Space Missions and Support:** This SA is necessary to generate specialized knowledge in fields that sustain human space flights, such as life sciences and space medicine.

1.3. Future Canadian Space Capacity: This Program Activity attracts, sustains and enhances the nation's critical mass of Canadian space specialists, fosters Canadian space innovation and know-how, and preserves the nation's space-related facilities capability. In doing so, it encourages private-public collaboration that requires a concerted approach to future space missions.

- **1.3.1. Space Expertise and Proficiency:** This SA is necessary to create and sustain a pool of space expertise and proficiency that will form the next generation of space professionals and workers, continuously able to provide solutions for future Canadian space endeavours.
- **1.3.2 Space Innovation and Market Access:** This SA is necessary to foster entrepreneurship that enhances Canadian industry's international positioning on commercial and government markets.
- **1.3.3. Qualifying and Testing Services:** This SA is necessary to ensure that mission-assigned technology and entire systems can safely and reliably meet the rigors of space and to demonstrate the suitability and effectiveness of new Canadian space technology for providing valuable contributions to space missions.

1.4. Internal Services: This program activity is necessary to implement the government's commitment to modern public service management. It directly supports the Management Accountability Framework (MAF). Internal Services include only those activities and resources that apply across an organization in the areas of:

- **1.4.1. Governance and Management Support** which includes Management and Oversight Services, Communications Services and Legal Services;
- **1.4.2. Resource Management Services** which includes Human Resources Management Services, Financial Management Services, Information Management Services, and Information Technology Services.
- **1.4.3. Asset Management Services** which includes Real Property Services, Material Services and Acquisition Services.

1.3 PAA CROSSWALK

Following a vast consultation of senior executives of other government departments, academia and industry stakeholders and heads of space agencies, the Canadian Space Agency formulated cohesive strategies focused on the current and future priorities of Canada and Canadians. This led to a restructuring and the overhaul of the Program Activity Architecture that will be effective on April 1st, 2011. The crosswalk from the former PAA to the new PAA is described in the table below.

PAA 2010-2011		PAA 2011-2012	
Program Activities	**Financial Resources ($ in millions)**	**Program Activities**	**Financial Resources ($ in millions)**
Space Based Earth Observation (EO)	78.8	SPACE DATA INFORMATION AND SERVICES	98.0
Space Science and Exploration (SE)	5.9		
Satellite Communications (SC)	11.4		
Generic Technological Activities (GTA) in support of EO, SE and SC	1.9		
Space Science and Exploration (SE)	161.1	SPACE EXPLORATION	166.3
Generic Technological Activities (GTA) in support of EO, SE and SC	5.2		
Space Based Earth Observation (EO)	9.8	FUTURE CANADIAN SPACE CAPACITY	76.6
Space Science and Exploration (SE)	17.5		
Satellite Communications (SC)	8.3		
Space Awareness and Learning (AL)	2.6		
Generic Technological Activities (GTA) in support of EO, SE and SC	38.3		
Internal Services	42.8	INTERNAL SERVICES	49.8
Space Science and Exploration (SE)	0.9		
Space Awareness and Learning (AL)	5.5		
Generic Technological Activities (GTA) in support of EO, SE and SC	0.7		
TOTAL:	**390.8**		**390.8**

Notes: 1. Financial Crosswalk based on 2010-2011Main Estimates.
2. Due to rounding, decimals may not add up totals shown.

1.4 PLANNING SUMMARY

CANADIAN SPACE AGENCY STRATEGIC OUTCOME

Canada's exploration of space, provision of space services and development of its space capacity meet the nation's needs for scientific knowledge, innovation and information.

PERFORMANCE INDICATORS

1. Depth and width increase of needed scientific knowledge

The depth and width of knowledge, generated in part through the CSA's support, is primarily based on the analysis of the following factors:

- Production of knowledge is measured by the number of publications and can be broken down by field of knowledge and referred to invested funds;
- Dissemination of knowledge is measured by the number of cited publications which can also be broken down by field of knowledge and by type and extent of the audience reached; and,
- Relevance of knowledge is measured, among others, by the number of publications listed under areas of knowledge previously targeted by the CSA.

2. Space generated innovation index

Innovation, generated in part through the CSA's support, is primarily based on the analysis of the following factors in the specific context of space:

- Idea generation which results in the creation of new knowledge, technologies, processes or their subsequent improvements;
- Idea development that can take the form of prototypes, scientific instruments and experiments; and,
- Commercialization and utilization measured by the number of applications developed and used or data requested and provided.

3. Acknowledgement/success stories by other government departments of impact on mandate delivery

The recognition by other government departments of the impact on quality of programs and services delivery attributable to data utilization, information, research results, or space services lies in monitoring of Web information and public documents and depends on the cooperation of participating organizations.

To learn more about the Strategic Outcome Measurement, go to Section 2: Analysis of Program Activities by Strategic Outcome.

RESOURCES	2011-2012	2012-2013	2013-2014
FINANCIAL ($ in millions)	424.6	371.1	317.5
HUMAN (FTEs)	710.2	710.3	710.3

PROGRAM ACTIVITY ALIGNMENT TO GOVERNMENT OF CANADA OUTCOMES					
Program Activity ($ in millions)	Forecast Spending 2010-2011	Planned Spending			Government of Canada Outcomes
		2011-2012	2012-2013	2013-2014	
Space Data, Information and Services	102.8	136.6	159.6	108.0	Well-managed and efficient government operations
Space Exploration	165.0	152.4	98.5	88.8	An innovative and knowledge-based economy
Future Canadian Space Capacity	67.2	86.1	65.2	72.3	An innovative and knowledge-based economy
Internal Services	51.2	49.4	47.8	48.5	N/A
TOTAL	**386.2**	**424.6**	**371.1**	**317.5**	

Note: Forecast spending of $386.2 million reflects the best estimates of cash expenditures to appear in the upcoming 2010-2011 Public Accounts. Forecasts spending figure differs from 2010-2011 Main Estimates of $390.8 million.

Contributions of Program Activities to Government of Canada outcomes are described in Section 2 of the *"Analysis of Program Activities by Strategic Outcome - Detailed Information"* posted on the Canadian Space Agency's website at:
http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

1.5 CONTRIBUTION OF PRIORITIES TO THE CSA STRATEGIC OUTCOME

STRATEGIC OUTCOME: "*Canada's exploration of space, provision of space services and development of its space capacity meet the nation's needs for scientific knowledge, innovation and information.*"

Space is important for Canada given its large land mass and extensive remote territories, low population density, long coast lines and resource-based economy. The Government of Canada is increasingly reliant on space to meet key public policy objectives related to sovereignty, security and safety, resources, the environment, the digital economy, and knowledge and innovation in ways not otherwise possible. Space has become a critical infrastructure that underpins Canada's economy and affects the life of every Canadian – a day without space would be a difficult day indeed. Space exploration is one of the instruments of innovation essential in ensuring the prosperity of our country.

An increasing number of countries are now involved in the peaceful development and use of space. Canada is at a crossroads where major projects have been delivered and are now operational, while opportunities to collaborate with international partners in major space missions are growing. Our advanced robotics systems for the International Space Station and the RADARSAT-2 satellite have been completed and deployed. Most of our other existing space assets are beyond their life expectancy and need renewal. Moreover, the generation of Canadian space specialists that have made Canada a space-faring nation will be retiring over the next few years: this is putting our essential and hard won space capacity at risk.

These are the reasons why the Government of Canada has mandated the development of a new space plan for Canada. Spearheaded by the Canadian Space Agency, strategies for the sustained and effective use of space by Canada have been devised with fourteen government departments in collaboration with senior representatives from over forty Canadian firms involved in the space business, twenty major Canadian universities and a host of national space agencies around the world.

The Canadian Space Agency is guided by a vision and strategic directions that, taken together, will provide a framework for the effective use of space by Canada in the future. Our space vision has been conceived for a country where governments, academia, businesses and citizens have timely access to relevant, reliable and high-quality data, knowledge, information and services from a variety of space assets, both domestic and foreign; a country that takes advantage of its favourable northern location to become an international hub for space data reception; a country that uses the challenges of space exploration as a powerful driver for knowledge and innovation; a country that provides exciting business and job opportunities in leading-edge space science and technology sectors; a country that uses space to address its public policy objectives, global challenges and to take its place in the world.

As from April 1st, 2011, the CSA's priorities will be guided by a strategic direction for each of the CSA Program Activities:

- Provide space data, services and information for Canadians;
- Foster knowledge and innovation through space exploration; and,
- Sustain and enhance Canada's space capacity.

Program Activity – Space Data, Information and Services

Planned Spending ($ in millions)		
2011-2012	2012-2013	2013-2014
136.6	159.6	108.0

Contribution of the Program Activity to the CSA Strategic Outcome

The contributions of this Program Activity to the strategic outcome are expected to result in an expanded use of space data, applications and information by government departments and agencies so that they can better deliver their policy and programs and perform their operational responsibilities effectively. This calls for a strong partnership between the Canadian Space Agency and other government departments and agencies.

The CSA, together with other government departments and agencies, will ensure that the country strategically select, build and operate the space assets and supporting ground infrastructure that Canada needs to address national priorities, perform world-class science in and from space in priority areas and provide high-quality space data, applications and services. Canada will contribute to international space missions whenever it is a cost-effective way to obtain the data needed to meet its priorities and strengthen its relationship with key international partners. The Canadian space community will be called upon to innovate technically, scientifically, financially, as well as through a broader range of business practices.

Ongoing Operational Priorities

The first operational priority is to further the development of the RADARSAT Constellation in order to provide continuity and enhanced functionalities to the users of RADARSAT-1 and RADARSAT-2 and to help the Government address key priorities: the Arctic, defence, sovereignty, safety and security, resources and the environment. Ground stations located in the Canadian Arctic are required to take full advantage of the RADARSAT Constellation and to receive data from various Canadian and foreign satellites.

A second operational priority is to further study the development of the Polar Communication and Weather (PCW) mission. This key space asset will provide broadband communications services and weather observations in the Canadian Arctic to support the Canadian Forces' operations, and foster social and economic development.

Expected Progress in 2011-2012

- Expanded awareness of and interest in space solutions by government departments and agencies.
- An increase in the volume of space data used by government departments and agencies to deal with peace and security, disaster management, climate observations, weather forecasting and trans-border pollution.

Program Activity – Space Exploration

Planned Spending ($ in millions)		
2011-2012	2012-2013	2013-2014
152.4	98.5	88.8

Contribution of the Program Activity to the CSA Strategic Outcome

The contributions of this Program Activity to the strategic outcome are expected to be advances in knowledge, exploration, technologies and expertise, as well as an increased use of this knowledge and know-how both in space and on Earth.

The CSA will ensure that the country remains a key partner in international initiatives involving exploration of our solar system and the conducting of science in space. Canada will strive to make optimal use of its access rights to the International Space Station. International partnerships, a hallmark of the Canadian approach to space exploration, will be a core component in the pursuit of this vision. The successful completion of these endeavours is strongly dependant on international consensus and on decisions by international partners in general and the United States and Europe in particular.

Ongoing Operational Priorities

The first priority is for Canada to continue as an active partner and participant in the International Space Station, operating robotic elements such as Canadarm2 and Dextre, performing scientific experiments and technology demonstrations and having access to flight opportunities for Canadian astronauts.

The second priority is fostering the development of advanced space robotics and mobility systems capable of contributing to international space exploration missions. These advancements have potential to improve how we live, prosper, and develop on our planet.

Expected Progress in 2011-2012

- An optimal use of the International Space Station for scientific research and space technological developments.
- An increase in strategic international cooperation to support the development of technologies in the fields of space robotics, scientific instrumentation, mobility systems and human space flight, all of which contribute to the exploration of the solar system.

Program Activity – Future Canadian Space Capacity

Planned Spending ($ in millions)		
2011-2012	2012-2013	2013-2014
86.1	65.2	72.3

Overall Contribution of the Program Activity to the CSA Strategic Outcome

The contributions of this Program Activity to the strategic outcome are expected to be the maintenance of the critical mass of academic, industrial and business expertise needed to address future national needs and priorities in space, as well as an increased pace of discovery, and innovation.

The CSA will leverage the innovation capability of industry by enhancing synergy through partnerships. The means envisioned are the creation of clusters of excellence, the promotion of closer links between universities and industry in priority areas for the purpose of facilitating knowledge and technology transfer, and the development of industrial policies that foster the emergence and continued growth of innovative small and medium-size businesses. Canada will also rely on its collaboration with the European Space Agency to enhance its technology base and improve access to European markets. These achievements call for greater coordination between the CSA and the Granting Councils in order to foster collaboration between Canadian universities working in partnership with the space industry and the government so that we can grow and develop our future space expertise and capacity.

Ongoing Operational Priorities

The first priority is the renewal of our long-standing cooperation agreement with the European Space Agency. This renewal is crucial because access to foreign markets is critical to the development and growth of Canada's space industry.

The second priority is the development and use of sub-orbital platforms (balloons, aircraft and sounding rockets) and small satellites to increase the pace of training and discovery. The use of sub-orbital platforms is a highly cost-effective way to provide space researchers with frequent space missions to hone their skills and produce research results at reasonable cost.

Expected Progress in 2011-2012

- An increase number of partnerships between CSA and academia, industry and governments in priority areas for Canadians.
- Enhanced space technology development programs according to technology roadmaps.
- Secure access to foreign space markets for Canadian industry and academia.

Program Activity – Internal Services

Planned Spending ($ in millions)		
2011-2012	2012-2013	2013-2014
49.4	47.8	48.5

Contribution of the Program Activity to the CSA Strategic Outcome

The contribution of this Program Activity to the strategic outcome is expected to be a better management of programs and services in accordance with the Management Accountability Framework.

New Management Priorities

The first priority is to complete the CSA governance review. A strong governance structure will ensure that stakeholders' priorities are taken into account as early as possible in the planning process. This will be accomplished by defining the roles, responsibilities and interrelationships of government departments with a stake in the space sector, and by providing a framework for the deployment and use of space assets with multiple roles. Equally important will be the strengthening of internal processes contributing to a strong governance of programs and projects.

The second priority is the final development and implementation of the CSA's Five-Year Investment Plan in accordance with TBS policies on investment planning, assets, acquired services, and management of projects. The CSA considers that investment planning will ensure that resources are allocated in a manner that clearly supports program outcomes, responds to government priorities, and achieves affordable, productive and financially sustainable delivery of programs and projects.

Expected Progress in 2011-2012

- Enhanced CSA credibility with central government agencies and the establishment of a collaborative mechanism with government partners.
- Government of Canada's portfolio of space activities is supported by a sound investment plan with an appropriate balance of risk and benefits to Canadians.

1.6 RISK ANALYSIS

Strategic Context of the Canadian Space Agency

International Context

Space is recognized by industrialized nations as an essential and strategic tool to meet their social, economic and foreign policy objectives. Accordingly, many governments around the world of traditional and emerging space faring nations are increasing their investments in space activities, seeking increased consolidation and the advancement of their space capabilities.

International cooperation is crucial to the implementation of the Canadian Space Strategy. Canada is working in partnership with other space faring nations, particularly through its longstanding relations with the National Aeronautics and Space Administration (NASA) and the European Space Agency (ESA). Through these partnerships, Canada can leverage its resources and maximize its return on investment while sharing technical expertise, knowledge, and infrastructure, and gaining access to areas where Canada has chosen not to invest due to limited resources. In addition, there are increasing concerns over issues such as space weather, space debris and climate change. These issues transcend national borders and promote increased cooperation among nations with common goals. Canada's space infrastructure must not only meet national strategic needs, but must also play a tangible role in responding to issues of interest to the international community.

Canada is regarded as a reliable partner that possesses unique technical and scientific capabilities, and as a nation that can meaningfully contribute to the initiatives of foreign space agencies. In particular, emerging space-faring countries in Asia and South America may offer great potential for future cooperation. Thus, Canada continues to deploy its efforts to gain a foothold in these emerging markets. It is of paramount importance that the Canadian Space Agency continues to work with its stakeholders to ensure the competitiveness of our research and business communities in world markets. Canada's space industry is perceived as internationally competitive. This was confirmed by the results of the 2009 Annual Survey of the Canadian Space Sector. The sector has yearly revenues of $3,025 billion, $1,491 billion of which are derived from exports, representing 49% of the industry's total revenues[1]. The main destinations of Canadian exports are:

- The United States remains the largest market accounting for 52.4% (or, $782 million) of the $1,491 billion of total exports;
- Europe is a strong second, accounting for 27.4% (or, $408 million);
- Export revenues from Oceania increased by 8.6% - from $51.2 to $55.6 million;
- Export revenues from South America increased by 22.9% - from $52.1 to $64 million; and,
- Export revenues from Africa decreased by 28.2% - from $10.8 to $7.8 million.

[1] CSA: State of the Canadian Space Sector 2009; Overall Revenues, Domestic v. Export Revenues.

National Context

The Canadian Space Agency recognizes that the best means of turning scientific and technological advancements into innovative products and services is through partnerships with Canadian universities and businesses. With its highly skilled workforce, our space industry not only generates wealth in our economy, but also provides competitive products and services. Given that the national market is relatively small, it is critical that the Canadian space industry be able to leverage foreign investments and generate export sales. Capitalizing on export revenue depends on the industry's ability to commercialize highly competitive products and services, and establish local and international partnerships.

In 2009, the Satellite Communications sector continued to generate almost 77% of Canada's $3,025 billion in space sector revenues. Moreover, the sector saw a revenue increase of 8.4% (from $2,146 billion to $2,326 billion) during that year. A breakdown of the total $3,025 billion in revenues by sectors of activity reads as follows:[2]

- Satellite Communications: 76.9% ($2,326 billion);
- Navigation: 8% ($243 million);
- Earth Observation: 8.5% ($258 million);
- Robotics: 3.8% ($114 million);
- Space Science: 2% ($61 million); and,
- Space-related activities in other areas: 0.8% ($24 million).

While small in terms of the number of firms, the Canadian space sector is knowledge-intensive and is at the forefront of research and innovation. Building on the strengths of 7,564 skilled workers, including 3,770 highly qualified personnel, the firms in this sector have acquired world-leading capabilities in niche areas such as Earth observation, space robotics, scientific instruments, telecommunications and navigation satellites.

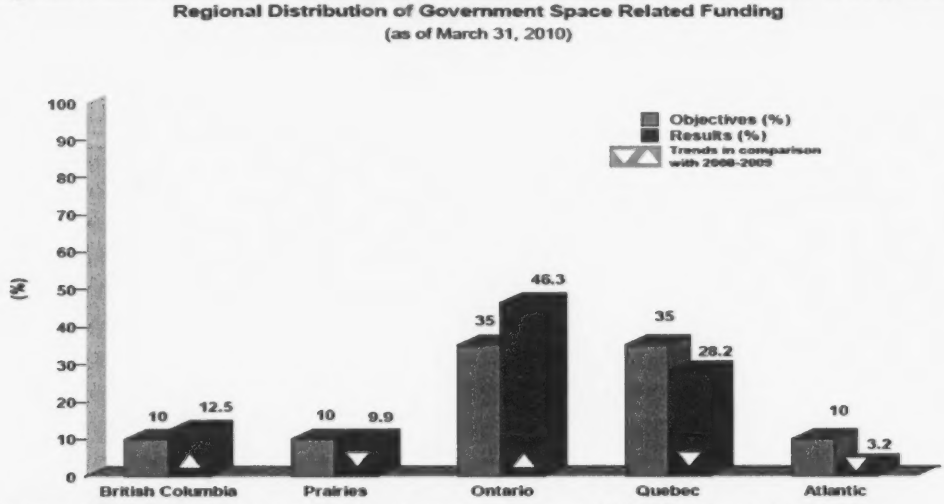
To learn more about Canadian space-related organizations, go to:
http://www5.asc-csa.gc.ca/eng/industry/csd.asp

Regional Development

To encourage sustainable industrial regional development and to maximize benefits to all Canadians, the CSA uses the following regional distribution objectives as guidelines for its investments in space: 10% in British Columbia; 10% in the Prairies; 35% in Ontario; 35% in Quebec; and, 10% in Atlantic Canada. The data presented in the graph shown below account for all Government space-related funding for the period from April 1988 to March 2010.

[2] CSA: State of the Canadian Space Sector 2009

Regional Distribution of Government Space-related Funding From 1988-1989 to 2009-2010



Source: CSA Organized Research Information System (ORIS), March 31, 2010.

To learn more about Canadian space-related organizations, go to:
http://www5.asc-csa.gc.ca/eng/industry/csd.asp

Government Context

1- The Canadian Science and Technology Strategy

The objective of the Government S&T Strategy is to "make Canada a world leader in science and technology and a key source of entrepreneurial innovation and creativity". In order for Canada to achieve this objective, the S&T Strategy identifies the following three underlining conditions for success: a strong private-sector commitment to S&T, a strengthened knowledge base and, be a magnet for talent. In 2008-2009, the CSA undertook a Strategic Review to evaluate its programs and ensure that they were aligned with the Government's S&T Strategy. Adjustments made to continue meeting the needs and priorities of Canadians are described in the sections "Areas of improvement" in the "Performance Summary" of the 2009-2010 Departmental Performance Report.

To learn more about Canada's Science and Technology Strategy, go to:
http://www.ic.gc.ca/epic/site/ic1.nsf/en/h_00231e.html

2- Corporate Integrated Planning

As directed by Treasury Board Secretariat the CSA will implement, by April 1st, 2012, the *Policy on Investment Planning, Assets and Acquired Services* which calls for the development of a multi-year investment plan demonstrating how the CSA will allocate its financial and human resources, and manage the related information and technology, the real property, the infrastructure assets and the acquired services in support of the programs identified in the Program Activity Architecture. The policy also takes into consideration the assessment of organizational project management capacity and the assessment of the risk level and complexity of all projects managed by the CSA.

Several other initiatives will bring the CSA closer to an integrated management of its program activities. These initiatives contribute to the mitigation of priority corporate risks and provide added value to decision-making and accountability processes:

- The development of the CSA's performance measurement capacity to implement the PAA Performance Management Framework in time for the 2011-2012 Departmental Performance Report.
- The implementation of a five-year Evaluation Plan starting in 2011-2012.
- The review of the CSA's external and internal governance structure in time for the planning of fiscal year 2012-2013.
- The review of the CSA Corporate Risk profile in accordance with the TBS Framework for the Management of Risk in time for the planning of fiscal year 2012-2013.
- The development of an integrated planning approach in order to align human, financial and technical resources with the management of program operations for fiscal year 2012-2013.

3- Corporate Risk Management

The CSA completed a review of its corporate risk profile and concluded that the following risks remained a corporate priority.

1. The CSA's capacity to align its strategies, planning, priorities, funding levels, operations and capacity to deliver, and obtain clear understanding and buy-in from managers and staff at all levels. Mitigation actions such as the following will be pursued in 2011-2012:

- Establish an Acquisitions Strategy and develop a multi-year Acquisition Plan;
- Develop and approve a CSA Policy on project costs allocation;
- Establish Cost Estimating and Review Team; and,
- Reorganize Configuration Management and Information Management.

2. The CSA's capacity to hire and maintain a qualified workforce required to deliver its mandate within the Government legislative frameworks, policies and rules. Mitigation actions such as the following will be pursued in 2011-2012:

- Review the Staffing Management Accountability Framework and its monitoring process;
- Implement the 2010-2013 Human Resources Integrated Plan and annually monitor the progress achieved; and,
- Implement a corporate action plan addressing the issues arising from the 2008 Public Service Commission Survey.

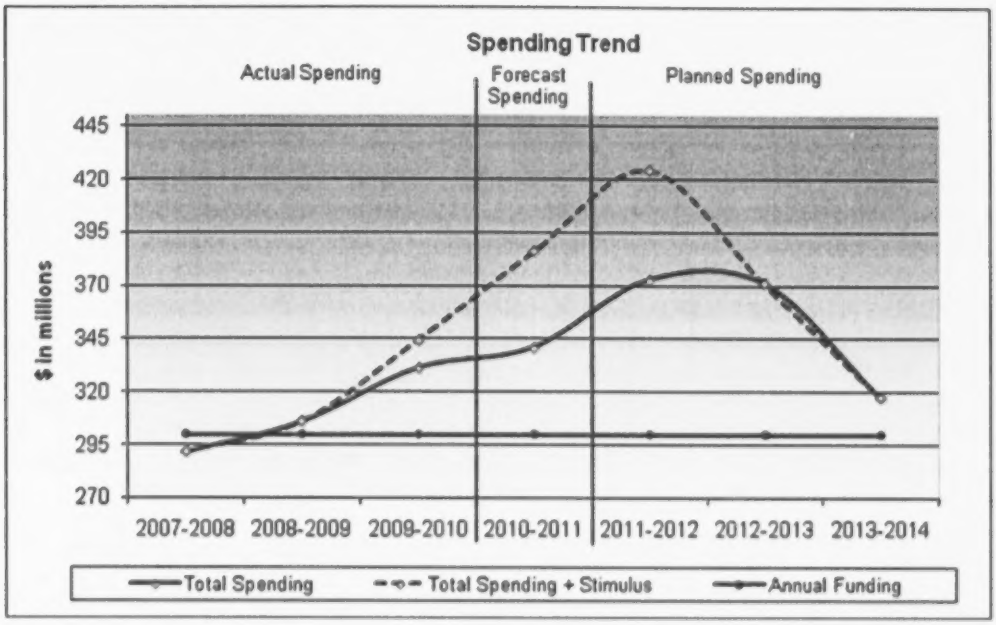
1.7 EXPENDITURE PROFILE

1.7.1 Departmental Planned Spending and Full-Time Equivalents (FTEs)

($ in millions)	Forecast Spending 2010-2011	Planned Spending 2011-2012	Planned Spending 2012-2013	Planned Spending 2013-2014
Space Data, Information and Services	98.0	**136.6**	159.6	108.0
Space Exploration	166.3	**152.4**	98.5	88.8
Future Canadian Space Capacity	76.6	**86.1**	65.2	72.3
Internal Services	49.8	**49.4**	47.8	48.5
Budgetary Main Estimates (gross)	390.8	**424.6**	371.1	317.5
Non-Budgetary Main Estimates (gross)	-	-	-	-
Less: Respendable Revenue	-	-	-	-
Total Main Estimates	390.8	**424.6**	371.1	317.5
Adjustments [1]:				
Supplementary Estimates				
Budget 2010 Cost Containment Measures	(0.4)			
Transfer from National Defence	2.5			
Transfer from Transport Canada	0.1			
Operating Budget Carry Forward	10.4			
Reimbursement of eligible pay list expenditures	0.8			
Reinvestment of royalties from the sale of RADARSAT-1 data	0.6			
ARLU				
Reprofiling of Funds	(18.6)			
Total Adjustments	(4.6)			
Total Planned Spending	386.2	-	-	-
Full-Time Equivalents	721.4	**710.2**	710.3	710.3

Notes: 1. Adjustments are to accommodate approvals obtained since the Main Estimates and include Budget Initiatives, Supplementary Estimates, etc.
2. Due to rounding, decimals may not add up totals shown.

1.7.2 Spending Trend



The CSA's annual A-Base budget of $300 million was set in Budget 1999. The difference in the spending trend shown above is mainly attributable to the following factors:

- The cumulative impact of the reprofiling of funds associated with the sound management of high-risk projects and programs (e.g., high technology risks, long term development cycle, uncertainties with work schedules).
- The incremental funds for the RADARSAT Constellation mission following the Government decision to provide CSA with an additional $111 million over five years (2005-2006 to 2009-2010) to work with the Canadian space industry on developing the next generation of advanced radar remote sensing satellites.
- In Budget 2009, Canada's Economic Action Plan provided the CSA with $110 million over three years to support the Stimulus initiative for the development of terrestrial prototypes for space robotic vehicles, such as the Mars and Lunar Rovers, and the further development of other technologies and space robotics.
- In Budget 2010, $397 million was allocated over five years (2010-2011 to 2014-2015) to develop the RADARSAT Constellation mission, $96.2 million of which have received spending authorization from Treasury Board.

1.8 ESTIMATES BY VOTE

For more information on our organizational votes and/or statutory expenditures, please see the 2011-2012 Main Estimates publication. An electronic version of the Main Estimates is available at http://www.tbs-sct.gc.ca/est-pre/index-eng.asp.

SECTION 2: ANALYSIS OF PROGRAM ACTIVITIES BY STRATEGIC OUTCOME

2.1 CANADIAN SPACE AGENCY STRATEGIC OUTCOME

All CSA Program Activities contribute to a single strategic outcome: *Canada's exploration of space, provision of space services and development of its space capacity meet the nation's needs for scientific knowledge, innovation and information.*

Strategic Outcome Measurement Challenges

The CSA faces the considerable challenge of having to assess the benefits expected by Canadians from its science and technology investments. Since the CSA works jointly with other government departments, Canadian academia and space industry, the performance measurement of space knowledge and technology development requires the participation of all partners. This task is especially challenging. The links between inputs, activities, outputs and the impact of any science and technology program are difficult to establish because the occurrence of spin-offs becomes observable and measurable[1], only over a long period. In the past, the CSA has periodically conducted surveys to capture such specific information about space science and technology and is well aware that this approach was not optimally efficient.

In order to improve its approach, the CSA intends to actively participate in the effort deployed by departments and agencies under the Federal Science and Technology Integration Board. Participation in such initiative can contribute to a better alignment between the measurement, reporting and evaluation of federal-sponsored S&T activities and, therefore, convey the generated outcomes to Canadians more appropriately. In doing so, the progress made towards the strategic outcome will be monitored through short, medium- and long-term advancements linked to intermediate measures instead of specific targets.

The strategic outcome will be measured based on three indicators:

1. Depth and width increase of needed scientific knowledge: The CSA already conducts in-house measurement of certain inputs such as the number of publications produced. To hone its approach, the CSA is considering the establishment of a bibliometric system which will list the number of publications, citations and type of audiences associated with the fields of knowledge that are priorities for Other Government Departments (OGDs).

1. Government of Canada (2010). Improving the Measurement, Reporting and Assessment of Federally Performed Science and Technology

2. Space generated innovation index: Government of Canada and private sector organizations collect and publish a large amount of aggregate information on innovation. The CSA must be able to report satisfactorily on the impact of its programs on Canadian innovation. The CSA intends to draw from the performance measurement methods developed by the Organization for Economic Cooperation and Development (OECD), building on the partnership created since 2006 between the CSA and others members of the OECD Space Forum.

3. Acknowledgement/success stories by OGDs of impact on mandate delivery: The measurement of this indicator relies on the capability of the OGDs to systematically acknowledge the benefits obtained from applications developed with the support of the CSA. Longitudinal information will be collected jointly with the OGDs in order to analyse the impact of the support provided by the CSA on the delivery of their programs.

2.2 PROGRAM ACTIVITIES

Space Data, Information and Services

Description: This Program Activity includes the provision of space-based solutions (data, information and services) and the expansion of their utilization. It also serves to install and run ground infrastructure that processes the data and operates satellites. This Program Activity utilizes space-based solutions assist Other Government Departments (OGDs) in delivering growing, diversified or cost-effective programs and services within their mandate, which is related to key national priorities, such as sovereignty, defence, safety and security, resource management, environmental monitoring and the North. It also provides academia with data required to perform its own research.

The services delivered through this Program Activity are rendered, and the data and information are generated and processed, with the participation of the Canadian space industry, academia, other government departments, national and international organizations, such as foreign space agencies, not-for-profit organizations, as well as provincial and municipal governments. This collaborative effort is formalized under national and international partnership agreements, contracts, grants or contributions.

SPACE DATA, INFORMATION AND SERVICES PROGRAM ACTIVITY PERFORMANCE MEASUREMENT	
Expected Result #1	**Performance Indicators**
User Other Government Departments (OGDs) offer more diversified or cost-effective programs and services due to their utilization of space-based solutions.	1. Number of OGDs' programs serviced by space data/services that are outlined in reports to parliament (RPP, DPR) of such users. 2. Degree of appreciation expressed by the OGDs through formal and informal structures.
Planning and Reporting Continuity: RPP 2010-2011 and DPR 2009-2010: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament	

RESOURCES	2011-2012	2012-2013	2013-2014
FINANCIAL ($ in millions)	136.6	159.6	108.0
HUMAN (FTEs)	103.7	103.7	103.7

Summary of Planning Highlights for Space Data, Information and Services

- The CSA will continue to develop the RADARSAT Constellation mission (RCM). This project will enhance Canada's ability to use radar imagery for operational maritime surveillance, disaster management and ecosystem monitoring and will support the strategic objectives of Canada on security and sovereignty, particularly in the Arctic. The critical design phase of the RCM, initiated in March 2010, will continue with planned completion by July 2012. The launch of the first satellite is planned during the 2014-2015 fiscal year, followed by the second and third satellite launches during the 2015-2016 fiscal year.

- Other government departments will continue to benefit from the many capabilities offered by RADARSAT-1 and 2 as new applications become operational. In particular, twelve new contracts were awarded following a call for proposals to industry for innovative application development for the benefit of the Government of Canada. The CSA will continue to operate RADARSAT-1 and Government Order Desk for RADARSAT-2. In addition, the CSA will continue to manage the RADARSAT-2 $445 million worth of prepaid data allocation to ensure that maximum benefits are realized, in accordance with the RADARSAT-2 Data Utilization Management Plan.

- The CSA will continue to support and participate in the operation and implementation of the *International Charter: Space and Major Disasters* by providing data and by-products from its RADARSAT satellites and data acquisition planning services.

- The CSA will complete the assessment of the requirements for Government of Canada users and will continue to develop the concept for the Polar Communications and Weather Satellite Mission as part of a joint study with Department of National Defence and Environment Canada that is expected to be completed by March 2011. The concept of the mission is to put two satellites in a highly elliptical orbit over the Northern Hemisphere to monitor weather and climate change, and provide communication services in the Arctic region.

- The CSA will continue to work towards the full utilization of the Government of Canada capacity credit for broadband telecommunications services in the North. Additional demonstrations of Ka-band technology will improve the use of the Anik F2 by northern communities for trials of innovative government services and in specific areas of interest to other government departments. With the ground segment upgrades completed, the next phase is the large scale deployment of the terminals for the operational phase. The planning for the remaining four years of the utilization phase is nearing completion. A call for applicants to potential end-users in the northern communities will be issued in the spring of 2011.

- The CSA and the Department of National Defence (DND) are partnering to manage the M3MSat micro-satellite project, which is based on an Automatic Identification System (AIS) payload. This project will demonstrate and further develop a multi-mission micro-satellite bus capability; will establish micro-satellites as operationally cost-effective; and, will allow optimization of the AIS payload in maritime traffic identification. It will complement the CSA's RADARSAT Constellation Mission and DND's Polar Epsilon program. Detailed design is being finalized and the manufacturing has begun. The launch is planned for July 2012 and the mission demonstration should end in 2014.

- The CSA, in collaboration with the European Space Agency, will support Canadian companies participating in the development of advanced Earth Observation space-borne instruments and the Global Navigation Satellite System. It allows our industry to access cutting-edge studies on new telecommunications services, develop new technologies, equipment and applications in multi-media, inter-satellite and mobile communications, and to demonstrate satellite-based communications services such as interactive communications services for remote communities and for disaster management.

- The CSA will continue to develop promising mission concepts for space-borne observations of atmospheric gases and aerosols in relation to climate and air quality. Their development will involve the Government of Canada and university scientists and will be used on foreign as well as Canadian spacecraft.

- The CSA will continue to support the implementation of international EO activities such as the Forest Carbon Tracking and the Caribbean Flood Project in collaboration with other space agencies.

Benefits for Canadians

Space assets produce many benefits for Canadians. More specifically, the following are a few examples of the positives impacts arising from synergistic collaboration between the CSA and other government departments.

The Department of National Defence is rapidly increasing its capacity to use space assets to deliver its mandate with the construction and operation of satellite data reception stations in Canada. The main objective is to use space capabilities to enhance the security and protection of Canadians, both at home and abroad.

Environment Canada is the largest user of satellite data within the Government of Canada. Space data is critical to the department's core mandate, including weather and air quality forecasting, environmental and ice monitoring, enforcement of environmental laws and regulations, climate change studies, and the science required to improve weather and environmental forecasts for Canadians.

Natural Resources Canada (NRCan) is a key user and provider of space data within the Government of Canada as it is mandated under the Department of Natural Resources Act to *'promote the development and use of remote sensing technology'*. In doing so, NRCan receives, uses, archives and disseminates satellite data. It uses space data to deliver its core mandate of mapping the Canadian landmass, managing natural resources, assessing natural hazards and maintaining the Canadian Spatial Reference System.

The Department of Fisheries and Oceans uses space data and information to support safe navigation, maritime surveillance, and ocean science and observations. It relies on accurate and timely satellite imagery of ice, allowing the Canadian Coast Guard to direct icebreaking activities in a more efficient and effective way.

To learn more about Space Data, Information and Services Program Activity, go to: Section 2 of the *"Analysis of Program Activities by Strategic Outcome – Detailed Information"* posted on the Canadian Space Agency's website at:
http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

To learn more about Earth observation, go to:
http://www.asc-csa.gc.ca/asc/eng/satellites/default.asp?page=observation

To learn more about satellite communications, go to:
http://www.asc-csa.gc.ca/asc/eng/satellites/default.asp

Space Exploration

Description: This Program Activity provides valuable Canadian science, signature technologies and qualified astronauts to international space exploration endeavours. This Program Activity contributes to the Government of Canada's Science and Technology Strategy. It could also generate spin-offs that contribute to a higher quality of life for Canadians and could foster nation-building. This Program Activity appeals to the science and technology communities and generates excitement within the population in general. It is targeted mostly towards Canadian academia and international space exploration partnerships. Canadian industry also benefits from the work generated within this Program Activity.

This Program Activity is delivered with the participation of foreign space agencies and Other Government Departments (OGDs). This collaborative effort is formalized under international partnership agreements, contracts, grants or contributions.

SPACE EXPLORATION PROGRAM ACTIVITY PERFORMANCE MEASUREMENT	
Expected Result #1	**Performance Indicator**
Expansion of scientific knowledge acquired through space exploration endeavours.	1. Number of peer-reviewed scientific publications, reports and conference proceedings using space exploration information and produced by researchers (sciences and technologies) in Canada.
Expected Result #2	**Performance Indicator**
Multiple use and applications of knowledge and know-how acquired through space exploration endeavours.	1. Number of terrestrial applications and of space re-utilization of knowledge and know-how acquired through space exploration endeavours.
Planning and Reporting Continuity: RPP 2010-2011 and DPR 2009-2010: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament	

RESOURCES	2011-2012	2012-2013	2013-2014
FINANCIAL ($ in millions)	152.4	98.5	88.8
HUMAN (FTEs)	189.1	189.1	189.1

Summary of Planning Highlights for Space Exploration

- The CSA will continue to support the International Space Station (ISS) assembly and maintenance operations and will initiate operational use of Dextre as a new element for making repairs to the ISS. In return, the CSA will continue to access on a long-term basis, the unique environment of the ISS as a platform for microgravity research in areas such as neuroscience, vascular studies and tree growth.

- The Canadian Astronaut Corps will adapt to the new reality of fewer flight opportunities as a result of the Shuttle retirement and will continue to use the expertise and skill set of flown astronauts to advance and position the Canadian Human Space flight program. Canadian astronaut Chris Hadfield has been assigned to the second Canadian Long-Duration mission to the ISS and for two months, he will become the first Canadian to command the Station and its crew. Mr Hadfield will live and work on the ISS for six months from December 2012 to June 2013.

- The CSA will improve coordination of space research through its participation in international working groups. For example, through the International Space Life Sciences Working Group, CSA works with NASA, the European Space Agency, and Japanese, German, French and Italian space agencies to coordinate and collaborate on space life sciences and multinational, world-class scientific research conducted on the ISS. Proposals that were selected during the 2009 International Life Sciences Research Announcement will be developed for execution on the ISS during the 2012-2014 timeframe.

- The CSA will continue to participate actively in the International Space Exploration Coordination Group (ISECG). This group was created in 2007 to promote coordination of 14 space agencies with respect to the exploration of the Moon and Mars. In 2011, the ISECG will present the Global Exploration Roadmap for robotics and human exploration of the Moon, Mars and Asteroids to the heads of various space exploration programs including the CSA.

- The CSA will continue its international collaboration on important astronomy and planetary exploration missions, such as the development of key components of the James Webb Space Telescope, NASA Mars Science Laboratory Mission, and ESA ExoMars.

- With the successful launch in May 2009 of ESA's Herschel and Plank space telescope, the CSA will continue to support the Canadian science teams involved in the operation and utilization of instruments aboard this space observatory to study how galaxies were formed in the early universe and how stars have been created since the dawn of time.

Canada's Economic Action Plan

With its *Economic Action Plan*, the Government of Canada enhanced its vision of and commitment to world-class scientific research and leading-edge innovative technologies by allocating $110 million over three years to the CSA *Stimulus* initiative. The two main objectives are the preservation and growth of Canadian expertise and leadership in space robotics, and the increased readiness and credibility of Canada as a partner in future space robotics projects and general space exploration. In 2010-2011, all contracts under the *Stimulus* initiative on space will have been awarded. In 2011-2012, the CSA will continue to work with its industrial contracting teams to deliver the terrestrial prototypes of the next generation Canadarm and prototypes for different rovers and their associated technologies for the exploration of the Moon and Mars. Using the Exploration Core funding, the CSA will also issue contracts to develop scientific instruments and to support analogue mission deployments.

Benefits for Canadians

The International Space Station is an excellent example of mutually beneficial collaboration among space-faring countries. Through our contribution to specialized technologies, Canadian astronauts and scientists have special access to a unique microgravity laboratory for conducting scientific and engineering studies. These priority research areas have great potential for creating the new knowledge that will improve how we live, prosper and develop on our planet.

Space exploration and scientific and technological initiatives provide opportunities for Canada to take part in the exploration of Mars. Increasing our understanding of Mars would almost certainly increase our understanding of the Earth, especially about our atmosphere and magnetic field.

Complementing the scientific advancements stemming from planetary exploration, is the development of exploration vehicles and their associated robotic technologies challenges including the use, for example, of solar-powered electric propulsion, which, in turn, could lead the way to the spin-off commercialization of green technologies.

Space astronomy provides an additional platform for Canadian astronomers and space industry to build on existing strengths and achieve global levels of excellence. The James Web Space Telescope is a perfect example of this excellence in that Canada has contributed two very advanced instruments to this venture: the Fine Guiding System (FGS) and a Tunable Filter Imager (TFI).

To learn more about Space Exploration Program Activity, go to Section 2 of the "*Analysis of Program Activities by Strategic Outcome – Detailed Information*" posted on the Canadian Space Agency's website at:
http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

To learn more about space science and exploration, go to:
http://www.asc-csa.gc.ca/asc/eng/sciences/default.asp and,
http://www.asc-csa.gc.ca/asc/eng/exploration/default.asp

Future Canadian Space Capacity

Description: This Program Activity attracts, sustains and enhances the nation's critical mass of Canadian space specialists, fosters Canadian space innovation and know-how, and preserves the nation's space-related facilities capability. In doing so, it encourages private-public collaboration that requires a concerted approach to future space missions. This Program Activity secures the nation's strategic and ongoing presence in space in the future and preserves Canada's capability to deliver internationally renowned space assets for future generations. It is targeted at Canadian academia, industry and youth, as well as users of Canadian space solutions (Other Government Departments (OGDs) and international partners).

This Program Activity is conducted with the participation of funding agencies, OGDs along with government facilities and infrastructure, foreign space agencies, not-for-profit organizations and provincial governments. This collaborative effort is formalized under contracts, grants, contributions or national and international partnership agreements.

FUTURE CANADIAN SPACE CAPACITY PROGRAM ACTIVITY PERFORMANCE MEASUREMENT	
Expected Result #1	**Performance Indicators**
Canada has a space community (academia, industry and government) able to contribute to the sustained and strategic Canadian use of space.	1. Vitality index of the Canadian space community (academic, industrial and government communities in terms of highly qualified personnel, S&T investments and development facilities, university space-related programs and research facilities). 2. Degree of match between workforce supplied and space community (industry and government) workforce requirements.
Planning and Reporting Continuity: RPP 2010-2011 and DPR 2009-2010: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament	

RESOURCES	2011-2012	2012-2013	2013-2014
FINANCIAL ($ in millions)	86.1	65.2	72.3
HUMAN (FTEs)	121.5	121.5	121.5

Summary of Planning Highlights for Future Canadian Space Capacity

- The CSA will continue the solid relationships forged with other government departments, science centres and museums, youth and science associations, the private sector, as well as the education community across Canada through learning activities such as:
  - Professional development workshops for educators;
  - Partnered initiatives to expand student and educator access to the space science and technology community;
  - Space-focused learning materials and teaching modules for students at the elementary and secondary school levels; and,
  - Web-based learning products designed as extra-curricular activities for youth, students and families that facilitate a concrete understanding of abstract concepts and increase understanding of space science and technology at all levels.
- The CSA will provide support and training to scientists and engineers through two new initiatives: the selection and creation of research clusters and the selection of projects for flight on sub-orbital platforms, both through competitive announcements of opportunities.
- By using the Partnership Support Program and the Natural Sciences and Engineering Research Council of Canada's (NSERC) Collaborative R&D Program, the CSA and NSERC will continue to foster closer cooperation among industry, universities and government in space research and technology development.
- On the bases of the results for the CSA's long-term roadmaps' exercise for space technology development and depending on the requirements for future missions, the CSA will issue R&D contracts in areas that have been selected after consultation with government, industry and academia. The CSA will continue to ask industry and research organizations to work on designated priority technologies in order to mitigate risks associated technologies required for future missions of Canadian interest, and contribute to the enhancement of Canadian capabilities.
- Through partnership with the European Space Agency (ESA), the CSA will continue to support the maturation and positioning of Canadian space technologies with respect to their potential use in future European Earth observation missions, Global Monitoring for Environment and Security, satellite telecommunications and navigation, as well as the participation of scientists in physical and life sciences space experiments.
- The David Florida Laboratory will continue to provide world-class, and cost-effective environmental space-qualification services for the assembly, integration and testing of spacecraft systems for CSA's programs, as well as for national and international clients. The CSA intends to make these facilities more accessible and available to academia and the Canadian space industry. This means that the David Florida Laboratory must remain a state-of-the-art so it can serve as critical enabler of space science and technology for the CSA.

Benefits for Canadians

Canada's future space capacity resides within academia, the space industry and government departments and agencies. By investing in programs that stimulate innovation within the space community and encouraging the competitiveness of our high-tech companies, the CSA contributes to the creation and sustainability of Canada's knowledge-based economy. However, it is important to note that the benefits arising from these investments will take a certain amount of time to materialize.

For example, the CSA's program, Space Expertise and Proficiency, promotes the education and training of the highly educated and highly skilled labour force of tomorrow. The CSA's program, Space Innovation and Market Access, promotes dynamic trade relationships with other nations, thereby increasing the ability of our Canadian companies to compete in the global marketplace on a medium- and long-term basis. There are significant economic advantages for Canada and quality-of-life benefits for Canadians in a constantly growing space industry, which currently has 200 organizations employing over 7,500 highly skilled engineers, scientists and researchers.

The CSA will also work at maintaining and developing the capacity and expertise of its scientific and technical staff by providing opportunities to contribute to leading-edge priority activities in cooperation with academia, industry and other government departments.

To learn more about Future Canadian Space Capacity Program Activity, go to Section 2 of the *"Analysis of Program Activities by Strategic Outcome – Detailed Information"* posted on the Canadian Space Agency's website at:
http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament:

To learn more about enabling technology development, go to:
http://www.asc-csa.gc.ca/eng/programs/default.asp

To learn more about qualifying and testing services go to:
http://www.asc-csa.gc.ca/asc/eng/dfl/default.asp

To learn more about space awareness and learning, go to:
http://www.asc-csa.gc.ca/asc/eng/educators/default.asp

Internal Services

Description: In accordance with the Management Accountability Framework this Program Activity serves to implement the Government's commitment to modern Public Service management. Internal Services include only those activities and resources that apply across an organization in the areas of Governance and Management Support which includes Management and Oversight Services, Communications Services, and Legal Services; Resource Management which includes Human Resources Management Services, Financial Management Services, Information Management Services and Information Technology Services; and Asset Management which includes Real Property Services, Material Services, and Acquisition Services.

INTERNAL SERVICES PROGRAM ACTIVITY PERFORMANCE MEASUREMENT	
Expected Result #1	**Performance Indicator**
Internal Services provide an added value to CSA managers in the performance of their duties.	1. CSA's rating against MAF criteria based on Round VIII assessment.
Expected Result #2	**Performance Indicator**
The highest priority risks identified in the CSA corporate risk profile are addressed and mitigated.	1. Mitigation action plans are implemented against the corporate risks identified as highest priorities.
Planning and Reporting Continuity: RPP 2010-2011 and DPR 2009-2010: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament	

RESOURCES	2011-2012	2012-2013	2013-2014
FINANCIAL ($ in millions)	49.4	47.8	48.5
HUMAN (FTEs)	295.9	296.0	296.0

Summary of Planning Highlights for Internal Services

In order for the CSA to have its management practices meet the standards set by government-wide policies, the following actions will be undertaken in 2011-2012:

- Review the CSA's external and internal governance structure in order to foster fruitful collaborations with government partners and external stakeholders, while enhancing the CSA's credibility with the federal government.

- Final development and implementation of the Investment Plan in accordance with TBS policies on investment planning, procurement and project management.

- Update of the CSA Corporate Risk profile in accordance with the new Risk Management Framework in time for the planning of the 2012-2013 fiscal year.

- Development of the CSA's performance measurement capacity to implement the PAA Performance Management Framework in time for the 2011-2012 Departmental Performance Report.

- Implementation of a five-year Evaluation Plan applicable to the CSA's 2011-2012 Program Activity Architecture.

Based on lessons learned from the Management Accountability Framework assessments and Internal Audit recommendations, the following actions will be undertaken in 2011-2012:

- Development of an integrated planning approach in order to align human, financial and technical resources with the CSA's strategies, priorities and operations for fiscal year 2012-2013.

- Implementation of the 2010-2013 Integrated Corporate Human Resources Plan in line with the Program Activity Architecture in order to attract and retain a qualified workforce to deliver its mandate.

- Review of existing policies pertaining to the management of intellectual property in order to guarantee access to it and promote the transfer of technologies.

- Management of information assets created by or for the CSA in order to support decision-making, guarantee secure access and ensure preservation for historical purposes in accordance with Canadian regulations.

- Assessment of management requirements to allow access by the public to space data produced by satellites and scientific experiments.

Benefits for Canadians

Canadians will benefit from well-managed and efficient government operations while maintaining rigorous stewardship over financial resources, assets, and human resources, as well as from a transparent, accountable and responsive federal government.

To learn more about Internal Services Program Activity, go to Section 2 of the *"Analysis of Program Activities by Strategic Outcome – Detailed Information"* posted on the Canadian Space Agency's website at:
http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

SECTION 3: SUPPLEMENTARY INFORMATION

3.1 FINANCIAL HIGHLIGHTS

3.1.1 Future-Oriented Financial Statements

The Future-Oriented Financial Statements (FOFS) presented in this RPP are intended to provide a general overview of the CSA's financial operations. The FOFS are prepared on an accrual basis to strengthen accountability and improve transparency and financial management.

Information on CSA's Financial Statements is at the following address:
http://www.asc-csa.gc.ca/eng/publications/default.asp#parliament

Future-Oriented Condensed Statement of Operations
For the Year (Ended March 31)

($ in millions)	% Change	Forecast 2011-2012	Estimated Results 2010-2011
Expenses	N/A	485,705	456,778
Revenues	N/A	6,271	5,523
Net Cost of Operations		**479,434**	**451,255**

Future-Oriented Condensed Statement of Financial Position
For the Year (Ended March 31)

($ in millions)	% Change	Forecast 2011-2012	Estimated Results 2010-2011
Assets	N/A	1,365,360	1,376,163
Liabilities	N/A	156,024	131,117
Equity	N/A	1,209,336	1,245,046
Total		**1,365,360**	**1,376,163**

Notes: 1. Percentage change: Not applicable because Forecasts and Estimated Results were not established on the same basis and therefore can't be compared.
2. Due to rounding, decimals may not add up to totals shown.

3.1.2 Supplementary Information Tables

All electronic supplementary information tables found in the 2011-2012 Report on Plans and Priorities can be found on the Treasury Board of Canada Secretariat's website at: http://www.tbs-sct.gc.ca/est-pre/estime.asp

Annexe 1: Details on Transfer Payment Programs (TPPs)
Annexe 2: Upcoming Internal Audits and Evaluations over the next three fiscal years
Annexe 3: Sources of Respendable and Non-Respendable Revenue
Annexe 4: Status Report on Transformational and Major Crown Projects
Annexe 5: Summary of Capital Spending by Program Activity
Annexe 6: User Fees

3.2 CSA CONTRIBUTIONS TO GOVERNMENT OF CANADA OUTCOMES

Contributions of Program Activities to Government of Canada outcomes are described in Section 2 of the *"Analysis of Program Activities by Strategic Outcome - Detailed Information"* posted on the Canadian Space Agency's website at:
http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

3.3 INDEX OF CSA SPACE MISSIONS

The CSA space missions are described in Section 2 of the *"Analysis of Program Activities by Strategic Outcome - Detailed Performance Information"* posted on the Canadian Space Agency's website at:
http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament